WHAT IS CLAIMED IS:

1. A method for defining mating properties of a graphical component in a computer-implemented drawing program, comprising:

    initiating an option to create a first constraint interface for a first geometric

5   characteristic of a first component;

    in response to the initiation, displaying a dialog window for specifying settings for the first constraint interface regardless of whether a second constraint interface is currently displayed, wherein the settings define mating properties for how the first geometric characteristic of the first component mates with the second constraint

10 interface; and

    persisting the first constraint interface of the first geometric characteristic with the first component.

2. The method of claim 1 further comprising:

15 selecting a command to place the first component in a display window;

    automatically placing the first component in the display window without further user interaction based on the settings of the first constraint interface.

3. The method of claim 2 wherein the automatic placement is enabled

20 through an option that is selectable in a dialog window displayed while the first component is being selected.

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4. The method of claim 1 wherein the first constraint interface and second constraint interface each identify a different geometric characteristic but must otherwise be identically configured in order to mate the first component with a second component based on the settings.

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5. The method of claim 1, further comprising displaying a glyph located in proximity to the first geometric characteristic wherein the display of the glyph indicates an existence of the first constraint interface.

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6. The method of claim 5, further comprising removing the glyph from display once the first constraint interface is mated with the second constraint interface.

7. The method of claim 5, further comprising modifying the glyph when a cursor is placed over the glyph.

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8. The method of claim 1, further comprising displaying a glyph within a browser window wherein the display of the glyph indicates an existence of the first constraint interface.

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9. The method of claim 8, wherein the glyph graphically represents the settings for the first constraint interface.

10.   The method of claim 9, further comprising modifying the glyph when the first constraint interface is mated with the second constraint interface.

11.   The method of claim 1, wherein one or more icons displayed in the

5   dialog window graphically depict a mating property.

12.   The method of claim 11, wherein the one or more icons are displayed on one or more selectable buttons in the dialog window.

10   13.   The method of claim 1, wherein the mating properties comprise a type of constraint interface.

14.   The method of claim 13, wherein the type of constraint interface is selected from a group comprising mate, angle, tangent, insert, rotation-rotation, rotation-

15   translation and translation-translation.

15.   The method of claim 13, wherein the mating properties further comprise a solution based on the type of constraint interface.

20   16.   The method of claim 15, wherein the solution is selected from a group comprising mate, flush, flip the first selection, inside, outside, opposed, aligned, forward and reverse wherein a subset of such solutions are available depending on the type of constraint interface selected.

17.   The method of claim 1, wherein:

the mating properties comprise a selection icon;

upon selecting the selection icon, control returns to a display window where the

5   first geometric characteristic is selected.

18.   The method of claim 1, wherein the mating properties comprise an offset

for specifying a distance or angle by which the first component is offset from a second

component.

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19.   The method of claim 1, further comprising creating a composite

constraint interface for the first component, wherein:

the composite constraint interface comprises a collection of the first constraint

interface and one or more additional constraint interfaces of the first component; and

15   in order for a second component to mate with the first component, each of the

constraint interfaces in the collection must be mated with a corresponding constraint

interface.

20.   The method of claim 19, further comprising displaying a copy of an

20   identical glyph for each of the constraint interfaces in the collection upon the creation of

the composite constraint interface.

21.   The method of claim 19, wherein the composite constraint interface is created by:

selecting the first constraint interface and the one or more additional constraint interfaces; and

5   selecting an option to create the composite constraint interface.

22.   The method of claim 21, wherein the option to create the composite constraint interface is invoked by right clicking a mouse button.

10   23.   The method of claim 19, wherein the composite constraint interface is created through a sequence of dialog windows that assist the user in selecting the first constraint interface and the one or more additional constraint interfaces.

24.   The method of claim 1, wherein the first constraint interface is created in
15   a part definition mode of the computer-implemented drawing program.

25.   The method of claim 1, wherein the first constraint interface is created in an assembly definition mode of the computer-implemented drawing program.

20   26.   The method of claim 1, further comprising:

selecting a representation of the first constraint interface; and

displaying the dialog window to allow editing of the settings.

27.   The method of claim 26, wherein displaying the dialog window comprises:

right clicking a mouse button while a cursor is located over the selected representation;

5   selecting an option to display the dialog window; and

displaying the dialog window to allow editing of the settings.

28.   The method of claim 26, wherein displaying the dialog window comprises:

10   double clicking a mouse button while a cursor is located over the selected representation; and

displaying the dialog window to allow editing of the settings.

29.   The method of claim 1, further comprising displaying a textual identifier

15 of the first constraint interface in a browser window.

30.   The method of claim 1, wherein the textual interface is located at a same hierarchical level as features of the component.

20   31.   The method of claim 1, wherein initiating the option comprises:

displaying a menu having an option to create the first constraint interface; and

selecting the option.

32.   The method of claim 31, wherein the menu is displayed by:

moving a cursor over a first geometric characteristic; and

right clicking a mouse button.

5   33.   The method of claim 1, wherein:

a constraint interface may be identified as either a primary constraint interface or

a secondary constraint interface; and

the primary constraint interface is used during placement of the first component.

10   34.   The method of claim 1, wherein the first constraint interface may be

suppressed.

35.   A system for drawing a graphical element comprising:

(a)   a computer system having a memory and a data storage device coupled

15   thereto;

(b)   a drawing program executing on the computer system, the drawing

program configured to:

(i)   initiate an option to create a first constraint interface for a first

geometric characteristic of a first component;

20   (ii)   in response to the initiation, display a dialog window for

specifying settings for the first constraint interface regardless of whether a

second constraint interface is currently displayed, wherein the settings define

mating properties for how the first geometric characteristic of the first

component mates with the second constraint interface; and

      (iii)   persist the first constraint interface of the first geometric

characteristic with the first component.

5   36.   The system of claim 35, wherein the drawing program is further

configured to:

    select a command to place the first component in a display window; and

    automatically place the first component in the display window without further

user interaction based on the settings of the first constraint interface.

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      37.   The system of claim 36, wherein the automatic placement is enabled

through an option that is selectable in a dialog window displayed while the first

component is being selected.

15   38.   The system of claim 35, wherein the first constraint interface and second

constraint interface each identify a different geometric characteristic but must otherwise

be identically configured in order to mate the first component with a second component

based on the settings.

20   39.   The system of claim 35, wherein the computer program is further

configured to display a glyph located in proximity to the first geometric characteristic

wherein the display of the glyph indicates an existence of the first constraint interface.

40.   The system of claim 39, wherein the computer program is further configured to remove the glyph from display once the first constraint interface is mated with the second constraint interface.

5   41.   The system of claim 39, wherein the computer program is further configured to modify the glyph when a cursor is placed over the glyph.

42.   The system of claim 35, wherein the computer program is further configured to display a glyph within a browser window wherein the display of the glyph

10   indicates an existence of the first constraint interface.

43.   The system of claim 42, wherein the glyph graphically represents the settings for the first constraint interface.

15   44.   The system of claim 43, wherein the computer program is further configured to remove the glyph when the first constraint interface is mated with the second constraint interface.

45.   The system of claim 35, wherein one or more icons displayed in the

20   dialog window graphically depict a mating property.

46.   The system of claim 45, wherein the one or more icons are displayed on one or more selectable buttons in the dialog window.

47.   The system of claim 35, wherein the mating properties comprise a type of constraint interface.

5   48.   The system of claim 47, wherein the type of constraint interface is selected from a group comprising mate, angle, tangent, insert, rotation-rotation, rotation-translation and translation-translation.

49.   The system of claim 47, wherein the mating properties further comprise a 10 solution based on the type of constraint interface.

50.   The system of claim 49, wherein the solution is selected from a group comprising mate, flush, flip the first selection, inside, outside, opposed, aligned, forward and reverse wherein a subset of such solutions are available depending on the type of 15 constraint interface selected.

51.   The system of claim 35, wherein:

the mating properties comprise a selection icon; and

upon selecting the selection icon, control returns to a display window where the 20 first geometric characteristic is selected.

52. .   The system of claim 35, wherein the mating properties comprise an offset for specifying a distance or angle by which the first component is offset from a

second component.

53.   The system of claim 35, wherein:

the computer program is further configured to create a composite constraint

5   interface for the first component;

the composite constraint interface comprises a collection of the first constraint

interface and one or more additional constraint interfaces of the first component; and

in order for a second component to mate with the first component, each of the

constraint interfaces in the collection must be mated with a corresponding constraint

10   interface.

54.   The system of claim 53, wherein the computer program is further

configured to display a copy of an identical glyph for each of the constraint interfaces in

the collection upon the creation of the composite constraint interface.

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55.   The system of claim 53, wherein the composite constraint interface is

created by:

selecting the first constraint interface and the one or more additional constraint

interfaces; and

20   selecting an option to create the composite constraint interface.

56.   The system of claim 55, wherein the option to create the composite

constraint interface is invoked by right clicking a mouse button.

57.   The system of claim 53, wherein the composite constraint interface is created through a sequence of dialog windows that assist the user in selecting the first constraint interface and the one or more additional constraint interfaces.

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58.   The system of claim 35, wherein the first constraint interface is created in a part definition mode of the computer-implemented drawing program.

59.   The system of claim 35, wherein the first constraint interface is created in

10   an assembly definition mode of the computer-implemented drawing program.

60.   The system of claim 35, wherein the computer program is further configured to:

select a representation of the first constraint interface; and

15   display the dialog window to allow editing of the settings.

61.   The system of claim 60, wherein the computer program is configured to display the dialog window by:

right clicking a mouse button while a cursor is located over the selected

20   representation;

selecting an option to display the dialog window; and

displaying the dialog window to allow editing of the settings.

62.   The system of claim 60, wherein the computer program is configured to display the dialog window by:

double clicking a mouse button while a cursor is located over the selected representation; and

5   displaying the dialog window to allow editing of the settings.

63.   The system of claim 35, wherein the computer program is further configured to display a textual identifier of the first constraint interface in a browser window.

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64.   The system of claim 35, wherein the textual interface is located at a same hierarchical level as features of the component.

65.   The system of claim 35, wherein the computer program is configured to

15   initiate the option by:

displaying a menu having an option to create the first constraint interface; and

selecting the option.

66.   The system of claim 65, wherein the menu is displayed by:

20   moving a cursor over a first geometric characteristic; and

right clicking a mouse button.

67.   The system of claim 35, wherein:

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a constraint interface may be identified as either a primary constraint interface or a secondary constraint interface; and

the primary constraint interface is used during placement of the first component.

5   68.   The system of claim 35, wherein the first constraint interface may be suppressed.

69.   An article of manufacture comprising a program storage medium readable by a computer and embodying one or more instructions executable by the

10   computer to perform a method for drawing a graphical element, the method comprising:

initiating an option to create a first constraint interface for a first geometric characteristic of a first component;

in response to the initiation, displaying a dialog window for specifying settings for the first constraint interface regardless of whether a second constraint interface is

15   currently displayed, wherein the settings define mating properties for how the first geometric characteristic of the first component mates with the second constraint interface; and

persisting the first constraint interface of the first geometric characteristic with the first component.

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70.   The article of manufacture of claim 69, wherein the method further comprises:

selecting a command to place the first component in a display window; and

automatically placing the first component in the display window without further

user interaction based on the settings of the first constraint interface.

71. The article of manufacture of claim 70, wherein the automatic placement

5 is enabled through an option that is selectable in a dialog window displayed while the

first component is being selected.

72. The article of manufacture of claim 69, wherein the first constraint

interface and second constraint interface each identify a different geometric

10 characteristic but must otherwise be identically configured in order to mate the first

component with a second component based on the settings.

73. The article of manufacture of claim 69, the method further comprising

displaying a glyph located in proximity to the first geometric characteristic wherein the

15 display of the glyph indicates an existence of the first constraint interface.

74. The article of manufacture of claim 73, the method further comprising

removing the glyph from display once the first constraint interface is mated with the

second constraint interface.

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75. The article of manufacture of claim 73, the method further comprising

modifying the glyph when a cursor is placed over the glyph.

76.   The article of manufacture of claim 69, the method further comprising displaying a glyph within a browser window wherein the display of the glyph indicates an existence of the first constraint interface.

5   77.   The article of manufacture of claim 76, wherein the glyph graphically represents the settings for the first constraint interface.

78.   The article of manufacture of claim 77, the method further comprising deleting the glyph when the first constraint interface is mated with the second constraint

10   interface.

79.   The article of manufacture of claim 69, wherein one or more icons displayed in the dialog window graphically depict a mating property.

15   80.   The article of manufacture of claim 79, wherein the one or more icons are displayed on one or more selectable buttons in the dialog window.

81.   The article of manufacture of claim 69, wherein the mating properties comprise a type of constraint interface.

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82.   The article of manufacture of claim 81, wherein the type of constraint interface is selected from a group comprising mate, angle, tangent, insert, rotation-rotation, rotation-translation and translation-translation.

83. The article of manufacture of claim 81, wherein the mating properties further comprise a solution based on the type of constraint interface.

5   84. The article of manufacture of claim 83, wherein the solution is selected from a group comprising mate, flush, flip the first selection, inside, outside, opposed, aligned, forward and reverse wherein a subset of such solutions are available depending on the type of constraint interface selected.

10   85. The article of manufacture of claim 69, wherein:

the mating properties comprise a selection icon; and

upon selecting the selection icon, control returns to a display window where the first geometric characteristic is selected.

15   86. The article of manufacture of claim 69, wherein the mating properties comprise an offset for specifying a distance or angle by which the first component is offset from a second component.

87. The article of manufacture of claim 69, the method further comprising

20   creating a composite constraint interface for the first component, wherein:

the composite constraint interface comprises a collection of the first constraint interface and one or more additional constraint interfaces of the first component; and

in order for a second component to mate with the first component, each of the

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constraint interfaces in the collection must be mated with a corresponding constraint interface.

88.   The article of manufacture of claim 87, the method further comprising displaying a copy of an identical glyph for each of the constraint interfaces in the collection upon the creation of the composite constraint interface.

89.   The article of manufacture of claim 87, wherein the composite constraint interface is created by:

selecting the first constraint interface and the one or more additional constraint interfaces; and

selecting an option to create the composite constraint interface.

90.   The article of manufacture of claim 89, wherein the option to create the composite constraint interface is invoked by right clicking a mouse button.

91.   The article of manufacture of claim 87, wherein the composite constraint interface is created through a sequence of dialog windows that assist the user in selecting the first constraint interface and the one or more additional constraint interfaces.

92.   The article of manufacture of claim 69, wherein the first constraint interface is created in a part definition mode of the computer-implemented drawing program.

93.   The article of manufacture of claim 69, wherein the first constraint interface is created in an assembly definition mode of the computer-implemented drawing program.

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94.   The article of manufacture of claim 69, the method further comprising:

selecting a representation of the first constraint interface; and

displaying the dialog window to allow editing of the settings.

10   95.   The article of manufacture of claim 94, wherein displaying the dialog window comprises:

right clicking a mouse button while a cursor is located over the selected representation;

selecting an option to display the dialog window; and

15   displaying the dialog window to allow editing of the settings.

96.   The article of manufacture of claim 94, wherein displaying the dialog window comprises:

double clicking a mouse button while a cursor is located over the selected

20   representation; and

displaying the dialog window to allow editing of the settings.

97.   The article of manufacture of claim 69, the method further comprising

displaying a textual identifier of the first constraint interface in a browser window.

98. The article of manufacture of claim 69, wherein the textual interface is located at a same hierarchical level as features of the component.

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99. The article of manufacture of claim 69, wherein initiating the option comprises:

displaying a menu having an option to create the first constraint interface; and

selecting the option.

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100. The article of manufacture of claim 99, wherein the menu is displayed by:

moving a cursor over a first geometric characteristic; and

right clicking a mouse button.

101. The article of manufacture of claim 69, wherein:

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a constraint interface may be identified as either a primary constraint interface or a secondary constraint interface; and

the primary constraint interface is used during placement of the first component.

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102. The article of manufacture of claim 69, wherein the first constraint interface may be suppressed.